

CONFORMAL LINING LAYERS FOR DAMASCENE METALLIZATION

Abstract of the Disclosure

Method and structures are provided for conformal lining of dual damascene structures in integrated circuits. Trenches and contact vias are formed in insulating layers. The trenches and vias are exposed to alternating chemistries to form monolayers of a desired lining material. Exemplary process flows include alternately pulsed metal halide and ammonia gases injected into a constant carrier flow. Self-terminated metal layers are thus reacted with nitrogen. Near perfect step coverage allows minimal thickness for a diffusion barrier function, thereby maximizing the volume of a subsequent filling metal for any given trench and via dimensions.

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